

APPLICANT(S): GINZBURG, Boris et al.  
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### AMENDMENTS TO THE CLAIMS

Please add or amend the claims to read as follows, and cancel without prejudice or disclaimer to resubmission in a divisional or continuation application claims indicated as cancelled. The following list of claims is intended to replace all prior versions or listings of claims in the application.

#### **Listing of Claims:**

1. (Cancelled)
2. (**Currently Amended**) The apparatus of claim 8 [[1]], wherein said predetermined criterion comprises a comparison between a channel quality value and a predetermined reference quality value.
3. (Original) The apparatus of claim 2, wherein said reference quality value comprises a minimum quality value.
4. (Original) The apparatus of claim 2, wherein said channel quality value is related to one or more data frames previously received or transmitted by the apparatus.
5. (Original) The apparatus of claim 2, wherein said channel quality value corresponds to a channel estimation related to said spatial multiplexing modem.
- 6-7 (Cancelled)
8. (**Currently Amended**) An apparatus comprising: The apparatus of claim 7,  
a multi-channel modem implementing a frequency-multiplexing modulation method;  
a spatial-multiplexing modem implementing a spatial -multiplexing modulation method; and  
a controller to select either said multi-channel modem or said spatial-multiplexing modem to modulate a data-frame of a signal based on a predetermined criterion,  
wherein said multi-channel modem further comprises:  
a plurality of channel access control modules able to be assigned to a plurality of individual frequent channels, respectively;

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a plurality of single-input-single-output encoding modules able to modulate data provided by said plurality of channel access control modules, respectively; and

a plurality of single-input-single-output decoding modules associated with said plurality of access control modules, respectively, and able to demodulate data received from a plurality of radio frequency paths, respectively.

9. (Original) The apparatus of claim 8, wherein said multi-channel modem further comprises a channel selection module to selectively control the assignment of said plurality of channel access control modules to said plurality of individual frequency channels.

10. (Cancelled)

11. **(Currently Amended)** An apparatus comprising: The apparatus of claim 10,

a frequency-multiplexing modem implementing a frequency-multiplexing modulation method;

a space-time coding modem implementing a spatial-multiplexing modulation method; and

a controller to select either said multi-channel modem or said spatial-multiplexing modem to modulate a data-frame of a signal based on a predetermined criterion,

wherein said space-time coding modem comprises:

a multiple-input-multiple-output channel access control module able to multiplex the data-frame of said signal to be transmitted into a plurality of parallel sequences; and

a multiple-input-multiple-output encoding module able to encode said parallel sequences and transmit the encoded sequence via a plurality of radio frequency paths.

12. (Original) The apparatus of claim 11, wherein said space-time coding modem further comprises a multi-input-multi-output decoding module to decode a plurality of received parallel data sequences from said plurality of paths.

13. (Cancelled)

14. **(Currently Amended)** The wireless device of claim 19 [[13]], wherein said predetermined criterion comprises a comparison between a channel quality value and a predetermined reference quality value.

15. (Original) The wireless device of claim 14, wherein said reference quality value comprises a minimum quality value.

16. **(Currently Amended)** The wireless device of claim 19 [[13]], wherein said frequency-multiplexing modem comprises a multi-channel modem.

17. (Original) The wireless device of claim 16, wherein said multi-channel modem comprises:

a plurality of channel access control modules able to be assigned to a plurality of individual frequency channels, respectively; and

a plurality of single-input-single-output encoding modules able to modulate data provided by said plurality of channel access control modules, respectively.

18. (Cancelled)

19. **(Currently Amended)** A wireless device comprising: ~~The wireless device of claim 18,~~

two or more omni-directional antennas able to send and receive signals;

a frequency-multiplexing modem implementing a frequency-multiplexing modulation method;

a space-time coding modem implementing a spatial - multiplexing modulation method; and

a controller to select either said frequency-multiplexing modem or said spatial-multiplexing modem to modulate a data-frame of a signal to be transmitted via one or more of said antennas, based on a predetermined criterion,

wherein said space-time coding modem comprises:

a multiple-input-multiple-output channel access control module able to multiplex the data-frame of said signal to be transmitted into a plurality of parallel sequences; and

a multiple-input-multiple-output encoding module able to encode said parallel sequences and transmit the encoded sequences via a plurality of radio frequency paths.

20-34 (Cancelled)

**35. (Currently Amended)** The system of claim 40 [[34]], wherein said predetermined criterion comprises a comparison between a channel quality value and a predetermined reference quality value.

36. (Original) The system of claim 35, wherein said reference quality value comprises a minimum quality value.

**37. (Currently Amended)** The system of claim 40 [[34]], wherein said frequency-multiplexing modem comprises a multi-channel modem.

38. (Original) The system of claim 37, wherein said multi-channel modem comprises:

a plurality of channel access control modules able to be assigned to a plurality of individual frequency channels, respectively; and

a plurality of single-input-single-output encoding modules able to modulate data provided by said plurality of channel access control modules, respectively.

39. (Cancelled)

40. **(Currently Amended)** A system comprising: ~~The system of claim 39,~~

a first communication device comprising:

two or more antennas to transmit and receive signals;

a frequency-multiplexing modem implementing a frequency multiplexing modulation method;

a space-time coding modem implementing a spatial-multiplexing modulation method;

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a controller to select said frequency-multiplexing modem or said spatial-multiplexing modem to modulate a data-frame of a signal to be transmitted via one or more of said antennas, based on a predetermined criterion;

wherein, said space-time coding modem comprises:

a multiple-input-multiple-output channel access control module able to multiplex the data-frame of said signal to be transmitted into a plurality of parallel sequences; and

a multiple-input-multiple-output encoding module able to encode said parallel sequences and transmit the encoded sequences via a plurality of radio frequency paths;

and

a second communication device able to receive one or more signals transmitted by said first device.